EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Leonidas Boutsikaris (Reg. No. 61,377) on August 1 and 12, 2011.

The Application has been amended as follows:

4. (Currently Amended) A semiconductor device comprising:

an active layer, to which nitrogen and hydrogen are added, and which is made of a semiconductor containing (i) polycrystalline ZnO or polycrystalline $Mg_xZn_{1-x}O$, (ii) amorphous ZnO or amorphous $Mg_xZn_{1-x}O$, or (iii) either (a) mixture of ~~the~~ polycrystalline ZnO and ~~the~~ amorphous ZnO or (b) mixture of ~~the~~ polycrystalline $Mg_xZn_{1-x}O$ and ~~the~~ amorphous $Mg_xZn_{1-x}O$; and

a blocking member for blocking the active layer from an atmosphere such that the atmosphere substantially does not influence a region, in which a movable charge moves, of the active layer, wherein

said active layer includes ~~said nitrogen and hydrogen as~~ intentionally added dopants <u>essentially consisting of said nitrogen and said hydrogen</u> having concentrations so that a threshold voltage of a gate voltage of the semiconductor device, when a

voltage between a drain and a source region is fixed at 10V, is controlled to be substantially is in a range between 0V and 3V.

7. (Currently Amended) The semiconductor device as set forth in claim 6, wherein:

at least one of the blocking layers is made of SiO_2, Al_2O_3, AlN, MgO, Ta_2O_5, TiO_2, ZrO_2, stab-ZrO_2, CeO_2, K_2O, Li_2O, Na_2O, Rb_2O, In_2O_3, La_2O_3, Sc_2O_3, Y_2O_3, $KNbO_3$, $KTaO_3$, $BaTiO_3$, $CaSnO_3$, $CaZrO_3$, $CdSnO_3$, $SrHfO_3$, $SrSnO_3$, $SrTiO_3$, $YScO_3$, $CaHfO_3$, $MgCeO_3$, $SrCeO_3$, $BaCeO_3$, $SrZrO_3$, $BaZrO_3$, $LiGaO_2$, ~~a mixed crystal of $LiGaO_2$ such as~~ $(Li_{1-(x+y)}Na_xK_y)(Ga_{1-z}Al_z)O_2$, or a solid solution containing at least two of them.

8. (Currently Amended) The semiconductor device as set forth in claim 7, wherein:

a blocking layer constituting the blocking layers is made of SiO_2, Al_2O_3, AlN, MgO, Ta_2O_5, TiO_2, ZrO_2, stab-ZrO_2, CeO_2, K_2O, Li_2O, Na_2O, Rb_2O, In_2O_3, La_2O_3, Sc_2O_3, Y_2O_3, $KNbO_3$, $KTaO_3$, $BaTiO_3$, $CaSnO_3$, $CaZrO_3$, $CdSnO_3$, $SrHfO_3$, $SrSnO_3$, $SrTiO_3$, $YScO_3$, $CaHfO_3$, $MgCeO_3$, $SrCeO_3$, $BaCeO_3$, $SrZrO_3$, $BaZrO_3$, $LiGaO_2$, ~~a mixed crystal of $LiGaO_2$ such as~~ $(Li_{1-(x+y)}Na_xK_y)(Ga_{1-z}Al_z)O_2$, or a solid solution containing at least two of them, and

said blocking layer is so provided as to meet the active layer separately from (i) each of two electrodes serving as blocking layers and connected to the active layer, and (ii) an insulating layer, which serves as a blocking layer and meets the active layer, for

insulating the active layer from a control electrode for controlling move of a movable electric charge in the active layer.

11. (Currently Amended) The semiconductor device as set forth in claim 6, further comprising:

a gate electrode for controlling move of a movable electric charge in the active layer;

a gate insulating layer, which serves as a ~~block~~ blocking layer, for insulating the active layer from the gate electrode;

a source electrode connected to the active layer; and

a drain electrode connected to the active layer,

wherein:

at least one of the blocking layers is made of SiO_2, Al_2O_3, AlN, MgO, Ta_2O_5, TiO_2, ZrO_2, stab-ZrO_2, CeO_2, K_2O, Li_2O, Na_2O, Rb_2O, In_2O_3, La_2O_3, Sc_2O_3, Y_2O_3, $KNbO_3$, $KTaO_3$, $BaTiO_3$, $CaSnO_3$, $CaZrO_3$, $CdSnO_3$, $SrHfO_3$, $SrSnO_3$, $SrTiO_3$, $YScO_3$, $CaHfO_3$, $MgCeO_3$, $SrCeO_3$, $BaCeO_3$, $SrZrO_3$, $BaZrO_3$, $LiGaO_2$, ~~a mixed crystal of $LiGaO_2$ such as~~ $(Li_{1-(x+y)}Na_xK_y)(Ga_{1-z}Al_z)O_2$, or a solid solution containing at least two of them.

12. (Currently Amended) The semiconductor device as set forth in claim 11, wherein:

a blocking layer constituting the blocking layers is made of SiO_2, Al_2O_3, AlN, MgO, Ta_2O_5, TiO_2, ZrO_2, stab-ZrO_2, CeO_2, K_2O, Li_2O, Na_2O, Rb_2O, In_2O_3, La_2O_3, Sc_2O_3, Y_2O_3, $KNbO_3$, $KTaO_3$, $BaTiO_3$, $CaSnO_3$, $CaZrO_3$, $CdSnO_3$, $SrHfO_3$, $SrSnO_3$, $SrTiO_3$,

$YScO_3$, $CaHfO_3$, $MgCeO_3$, $SrCeO_3$, $BaCeO_3$, $SrZrO_3$, $BaZrO_3$, $LiGaO_2$, ~~a mixed crystal of $LiGaO_2$ such as~~ $(Li_{1-(x+y)}Na_xK_y)(Ga_{1-z}Al_z)O_2$, or a solid solution containing at least two of them, and

said blocking layer is so provided as to meet the active layer separately from the source electrode, the drain electrode, and the gate insulating layer, each of which serves as a blocking layer.

13. (Currently Amended) The semiconductor device as set forth in claim 6, further comprising:

a gate electrode for controlling move of a movable electric charge in the active layer;

a gate insulating layer, which serves as a ~~block~~ blocking layer, for insulating the active layer from the gate electrode;

a source electrode connected to the active layer; and

a drain electrode connected to the active layer,

wherein:

at least one of the blocking layers is made of a resin.

Allowable Subject Matter

Claims 4-34 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 4, Kawasaki et al. in view of Goodman and further in view of Yan et al. and further in view of Vijayakumar et al. and still further in view of Wager et al.

disclose all the limitations except for the limitation "said active layer includes intentionally added dopants essentially consisting of said nitrogen and said hydrogen having concentrations so that a threshold voltage of a gate voltage of the semiconductor device, when a voltage between a drain and a source region is fixed at 10V, is controlled to be substantially is in a range between 0V and 3V". In other words, the threshold voltage of the claimed semiconductor device is controlled by dopant concentrations of only nitrogen and hydrogen.

Response to Amendment

The Declaration under 37 CFR 1.132 filed April 15, 2011 is sufficient to overcome the rejection of claim 4 based upon Kawasaki et al. in view of Goodman and further in view of Yan et al. and further in view of Vijayakumar et al. and still further in view of Wager et al. upon amending claim 4 as described above to render amended claim 4 commensurate with the Declaration, i.e. the threshold voltage of the claimed semiconductor device is controlled by dopant concentrations of only nitrogen and hydrogen.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAY C. KIM whose telephone number is (571)270-1620. The examiner can normally be reached on 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. K./
Art Unit 2815
August 25, 2011

/JAY C KIM/
Art Unit 2815